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ABSTRACT

A series of three studies investigated the role of play materials in supporting social interactions of nursery school children. Subjects were 14 boys and 11 girls, 4 and 5 years of age, who came from a variety of socioeconomic and racial backgrounds. Observations were made for 16 days, during the free play hour at each of four play centers: art, games, blocks, and dramatic play. The first observational study indicated that, for 4- and 5-year-old children (1) assertive-disruptive interactions occurred most frequently in block play center and least frequently in the art; (2) boys were more often involved in assertive-disruptive interactions than were girls. A second observational study confirmed these results for 4- and 5-year-old children, but not for 1- and 2-year-olds who were also observed. In the third study, available play materials were experimentally manipulated for groups of boys and groups of girls. The behavior of the girls was as expected. The boys, however, showed more assertive-disruptive behavior in art than in blocks. This result is interpreted as supporting the view that the effect of play setting on social interaction is not intrinsic to the play materials but depends upon the child's expectations and knowledge of the situation. (Author/MS)

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Social Ecology and Social Behavior: The Development of the Differential Usage of Play Materials in Preschool Children

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The Development of the Differential Usage of Play Materials in Preschool Children

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I would like to share with you the results of three studies on the relationship between the setting in which a child acts and the child's social behavior in the nursery school classroom. Ecological analyses have repeatedly demonstrated that setting or context is a very powerful influence on social behavior. Despite these well-documented findings on the effect of the setting, the processes by which these effects are achieved have remained obscure. The aim of the present work was to clarify the relations between setting and behavior; that is, how is it that particular settings become associated with particular social interactions in young boys and girls?

In a nursery school, different settings may be provided by different play centers, each containing a certain type of toy. The purpose of the first study was to determine whether, in a typical nursery school classroom, the play settings influences the quality of children's social interactions. Do some settings encourage assertive-disruptive interactions, and other settings, more positive-constructive interactions?

Subjects were fourteen boys and eleven girls, four and five-years old, from a variety of socioeconomic and racial backgrounds. Observations were made at four play centers, Art, Games, Blocks, and Dramatic Play. The Art, Games, and, Blocks centers contained the materials to be expected from their names. Dramatic Play, which seems to be an euphemism for "housekeeping." contained a play stove and sink, a play store, and a closet with old clothes for dress-up.

Observations were made at each of the four centers twice daily for sixteen days, during the free play hour. Each child at each center was the target of observation for thirty seconds. Interobserver agreement was 91%. Recorded interactions were classified into two broad categories, assertive-disruptive and positive-constructive. "Assertive-disruptive" was not intended to be synonymous with "aggressive," although some of the behaviors in this category may be considered aggressive. Assertive-disruptive behaviors are those which interfere with other children's activities or which disrupt the routine of the classroom. Behaviors comprising the assertive-disruptive category include hitting, pushing, throwing toys, taking toys, negative commands, name-calling, and others. All other interactions were called positive-constructive.

The first study found that total amount of interaction did not vary from center to center. Interactions occurred in 61% of the thiry-second observation periods, combining all centers. The percentages for individual centers were all quite close to this figure, ranging from a low of 56% in Blocks to a high of 55% in Games.

Assertive-disruptive interactions were relatively infrequent in all the centers. Of all the interactions in all the centers, only 18% were assertive-disruptive. The percentage of total interactions which were assertive did vary according to center (Figure 1). The biggest difference was between Art, where 6% of the interactions were assertive, and Blocks, 28%. The percentage for Dramatic Play, 22%, is relatively high also. This center, however, was adjacent to Blocks in the classroom, separated only by a shelf, so that children moved freely between the centers. Other centers were more distinctly separated physically.

The difference in assertive-disruptive interactions according to center was confounded with a sex difference. Boys were involved in most of the assertive interactions at all centers. The four play centers were differentially attractive to boys and girls. This graph (Figure 2) shows the proportions of the observations of males and of females made at each of the centers. Although more assertive interactions occurred in Blocks, most of the children playing there were boys.

The first study found differences in the kind of social interactions as a function of sex and setting without being able to separate the effects of these two variables. The purpose of the second study was to replicate and extend the first study. Two five-minute observations were made of nineteen one- and two-year-olds, all low-income Black children, and nineteen four- and five-year-olds of a variety of racial and socioeconomic backgrounds in the same nursery school as the first study. The results for four- and five-year-olds were the same as in the first study: more assertive interactions for boys than for girls and more in Blocks than in Art. Total interactions with other children were greater for the older than for the younger age group (Figure 3). Assertive interactions were not significantly different for boys and girls at the younger age level. No analysis of the effect of play setting could be made for the younger children, as they did not typically use any toy very long and often were not using any toy when interactions occured.

The second study suggested that effects of setting and of sex emerge around the third or fourth year. As in the first study, the effect of setting was confounded with the sex effect for four- and five-year-olds. In an attempt to separate these effects, a third study was designed in which groups of boys and groups of girls were observed separately with the experimenter controlling the toys available to the groups.

In contrast to the previous naturalistic observations, children in this study were observed in two ten-minute sessions in same-sex groups of three, in an experimental room equipped with Art materials for one session and Blocks for the other. There were nine groups of boys and ten groups of girls. The children were middle-class and most of them were white. Experimental sessions were at least a week apart for all groups. Half of the boys and girls played with Art materials first; the other half had Blocks first.

The number of five-second blocks in which interactions of any kind occurred and in which assertive interactions occurred were tested by multivariate analysis of variance. For total amount of interaction, there was no significant interaction or main effect. For assertive behavior, there was an interaction between sex and play material (Figure 4). The results for girls were as expected--less assertive behavior than boys in both conditions and slightly less in Art than in Blocks. For boys, however, there was a striking reversal of the expected effects. Boys showed much more assertive behavior with Art materials than with Blocks. In the experimental Art setting, some boys threw clay and crayons and stomped on clay in a manner that was never observed in the classroom.

This surprising result may help us understand the way in which settings influence behavior. Consider the possible explanations. First, physical materials may set limits and constraints on activities, including social interactions. A second possibility is that children are selectively drawn to materials that permit the type of behavior characteristic of them; disruptive boys may choose to play at the Blocks center. Settings may have differential attractiveness to different kinds of children. A third possibility is that the controlling influence is in the interactions themselves. Children, and adults, shape each other's behavior in the setting. So, in

addition to whatever contributions physical materials make, the child's interactions define expectations for behavior in that setting. Redefinition of expectations can change the effects of the setting.

There are differences in the physical materials in Blocks and in Art that would seem to support different kinds of interactions. The child must restrain his bodily movement somewhat in order to use materials appropriately in Art. If the child behaves as expected, he paints or molds clay, activities which require only small movements of hands. The activities in Blocks allow more vigorous physical activity: here the normal course of play may lead to more assertive interactions. In the first two studies, assertive behavior in Blocks often involved, for example, knocking over blocks, pushing a truck into another child. In Art, the few assertive incidents more clearly involved inappropriate use of materials--as one instance in which three boys made a game of smashing clay into each other's faces.

In addition, in Art in the classroom, the child was often expected to make something--a figure from the clay or a picture from the paints and paper--and they worked intently toward that end without becoming involved in assertive behavior. There was a comparable clearcut product expected from the child's activity in Blocks.

These differences between Blocks and Art, however, appear to be influenced by the child's expectations, which are in turn based on his past interactions in those situations. In the experimental Art setting, the controls usually present in the classroom were not operating. In several instances, a boy would look at the observer before throwing clay at another boy. Perhaps a disapproving frown from the teacher would have been enough to inhibit the behavior in the classroom but in the experimental room, the observer expressed no disapproval.

Once a boy initiated the throwing of clay, the behavior continued only if at least one other boy joined in. The baseline probability (Figure 5) of the behavior "throwing clay" was relatively low but, given that one boy threw clay, the probability of his partners showing the same behavior within fifteen seconds was relatively high, .67. Thus, the redefining of rules for behavior in Art seemed to be a reciprocal process. The correlation (Figure 6) of each child's "throwing clay" with the other was extremely high, .99 for Boys 1 and 2, .97 for Boys 1 and 3, .99 for Boys 2 and 3. For half the nine groups, the scores were 0 but in the groups where the behavior occurred, the performance of the three boys was similar. A visual representation (Figure 7) of sequences of the behavior "throws clay" for four of the groups further illustrates the relationships among the behavior of the three boys within each group. The line represents the 12-minute session. Each mark represents a five-second block in which the behavior occurred. Again, we see the similarity in behavior of the three boys within each group.

Settings were probably under continuing evaluation and definition by children. Behaviors are tried and the children learn through interactions with others what is acceptable and unacceptable in various settings. For example, two boys, part of group 4 (in Figure 7) which had been extremely assertive in their play in Art, were seen about ten minutes after their session, sitting on the floor outside their classroom door, arms folded and frowning. The teacher had sent them out because they had continued their assertive behavior in the classroom--an unsuccessful attempt at redefinition!

Why was there not a similar redefinition in Blocks and with girls? One can speculate that the experimental Blocks setting, with groups of three boys, was more like the classroom Blocks center, which was often occupied by only boys. The boys behaved much the same way they would have in the classroom.

Bringing boys together in Art, which was not typically an all-boy activity, may have led to the easy redefinition of the situation. In the case of girls, there was a much lower probability of assertive interactions in all situations.

To summarize, it appears that there is an effect of play setting on social interactions of four- and five-year-old children. The effect may be greater for boys than for girls and probably is defined through the interactions of children and adults in the setting. Redefinition can occur in a short time, if interactions with people in that setting are different from those expected.

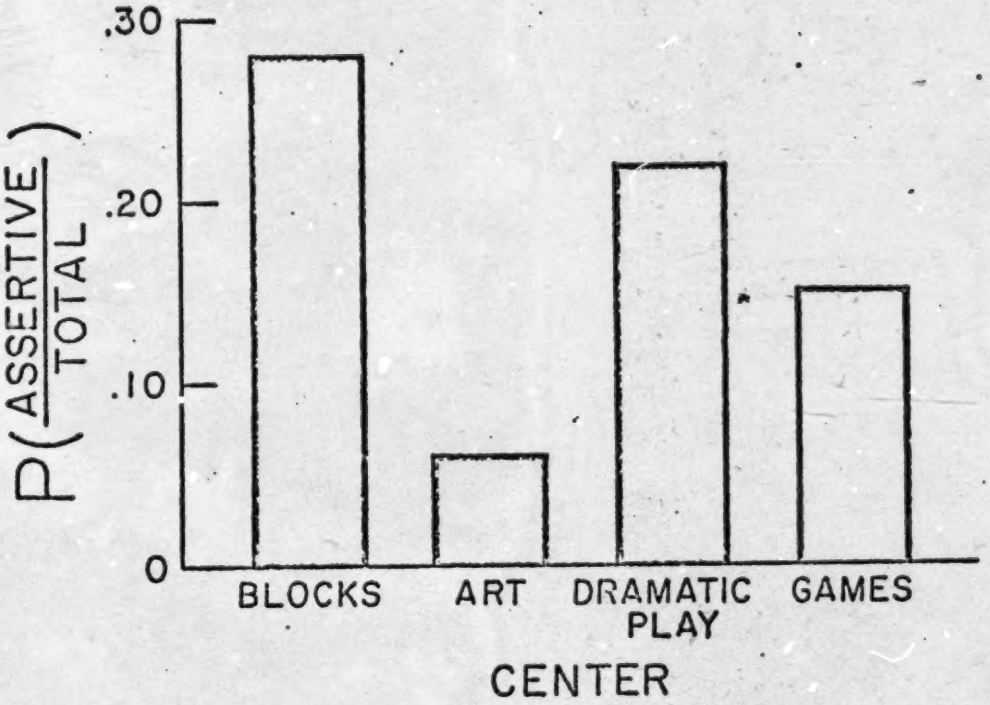

Figure 1. Proportion of assertive interactions at the four play centers. A comparison of the center having the highest proportion of assertive interactions with the center having lowest proportion revealed that the number of observation blocks in which at least one assertive interaction occurred was significantly greater for Blocks than for Art ($\chi^2 = 7.59$, $p < .01$).

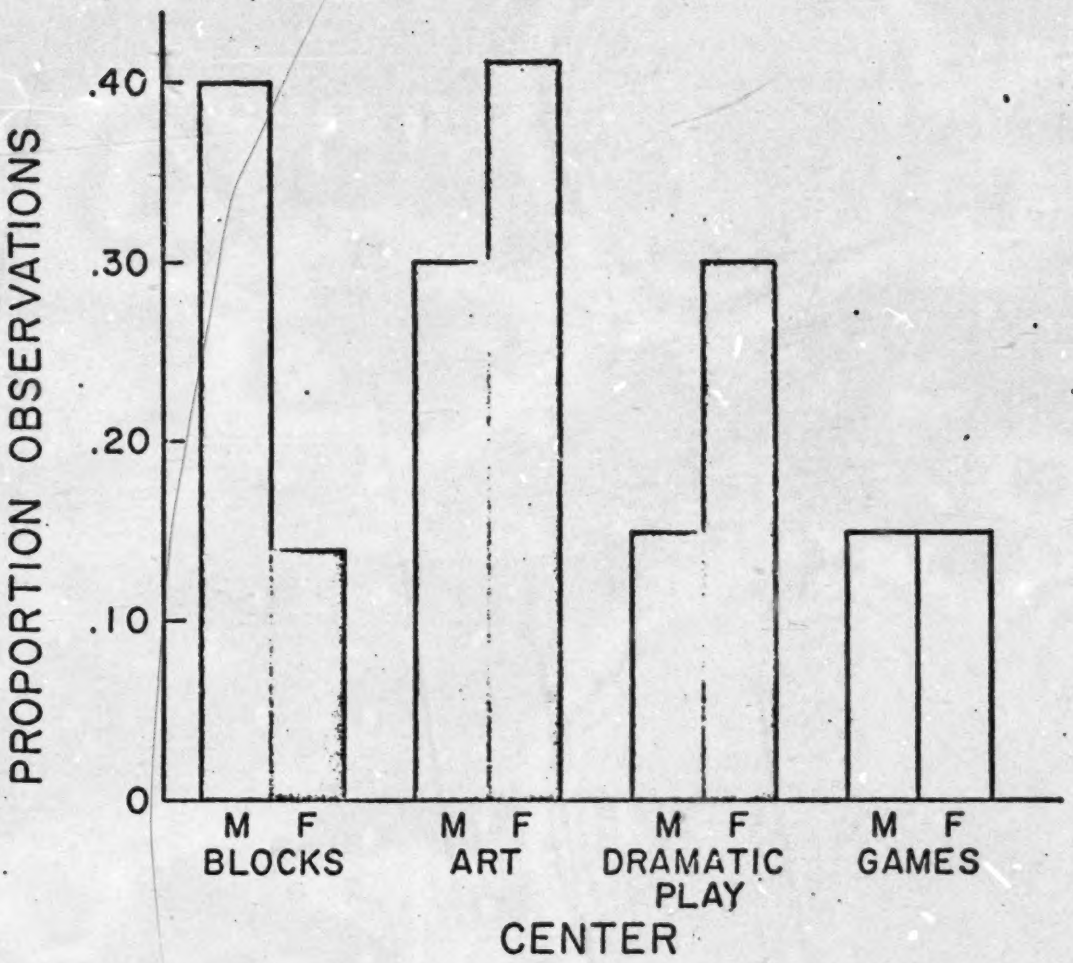

Figure 2. Proportion of observations of males and of females at the four play centers. Boys chose to play in the Blocks center more than in any other center and girls, in Art, during the free play hour.

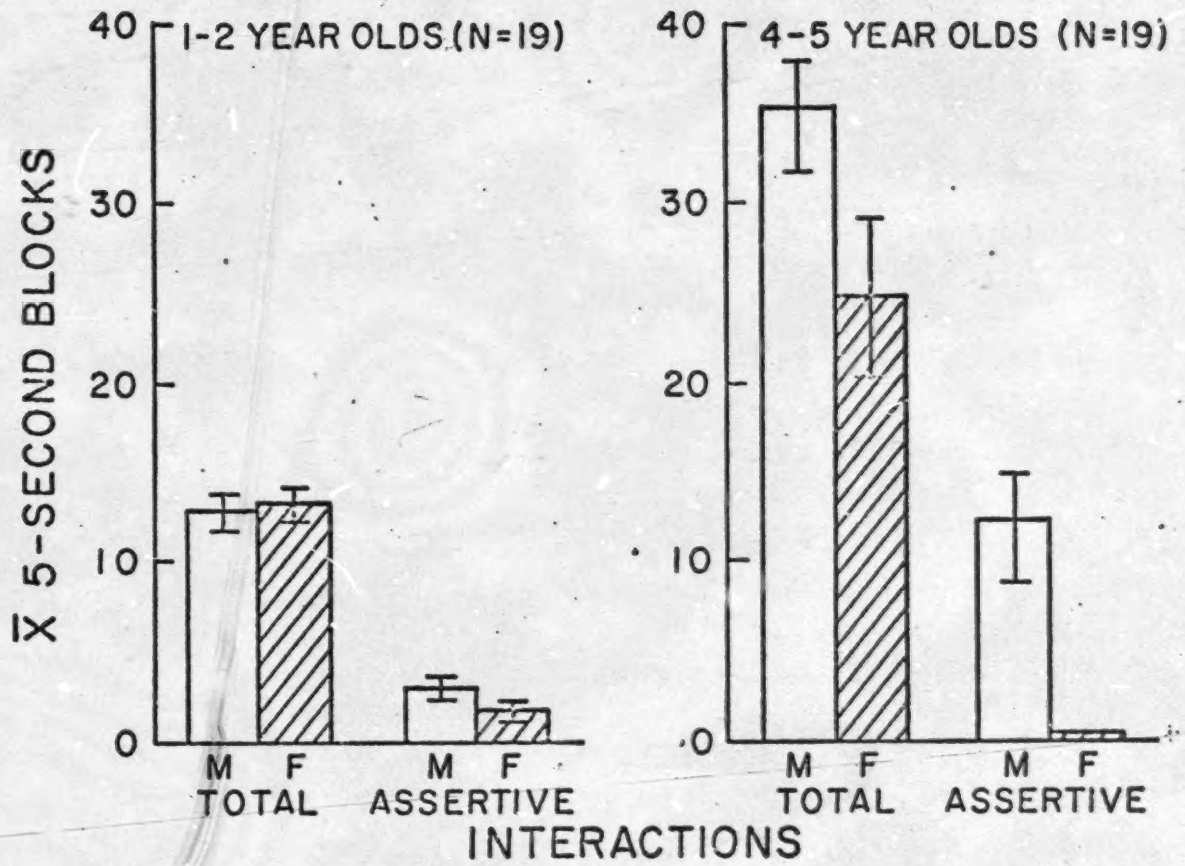

Figure 3. Number of five-second blocks in which interactions occurred for one- and two-year-old and four- and five-year-old males and females. Total amount of social interaction with other children was significantly greater for four- and five-year-olds than for one- and two-year-olds ($t=2.67$, $p < .005$). Tests of sex differences in total interactions yielded nonsignificant t's for both age groups.

In the older group, all nine girls and four of the ten boys had 0 scores for assertive interactions. The number of non-zero scores was significantly greater for boys than for girls (Fisher exact probability test, $p < .05$). The t-test for the difference between boys and girls in the younger group was not significant.

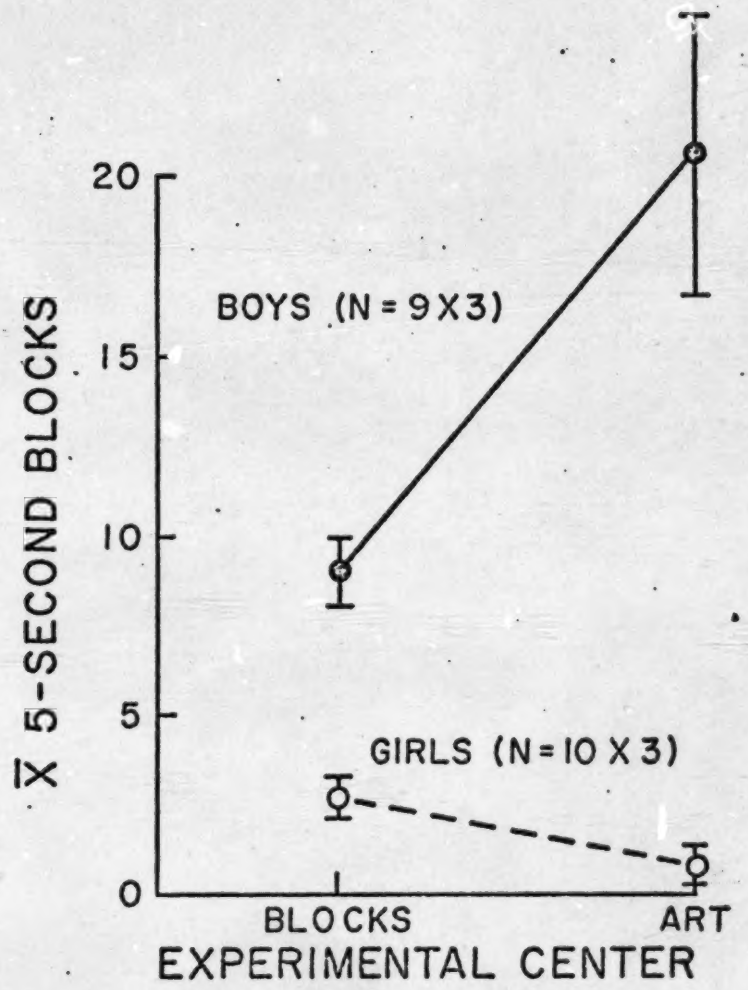

Figure 4. Number of five second blocks in which assertive interactions occurred for males and females in Blocks and Art. There was a significant interaction between sex and play materials ($F=4.4$, $p < .05$). There was a significant difference between boys and girls in Art ($F=11.7$, $p < .002$). The difference between boys and girls in Blocks was not significant.

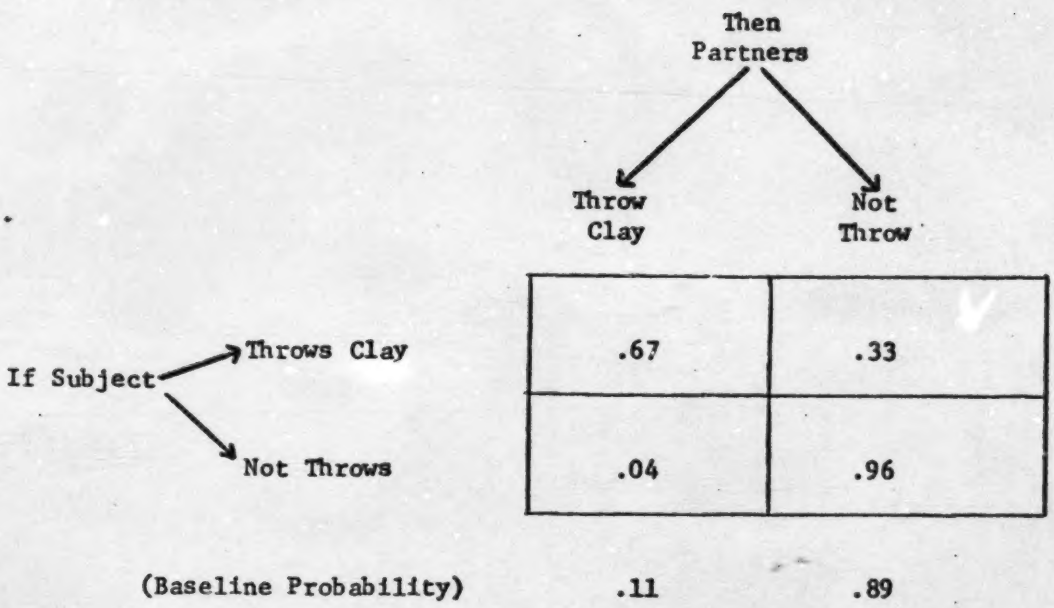

Figure 5. Baseline and conditional probability for behavior "throws clay" for male group partners. If one boy threw clay, the probability of his partners showing the same behavior within 15 seconds was .67, much higher than the baseline probability of the behavior.

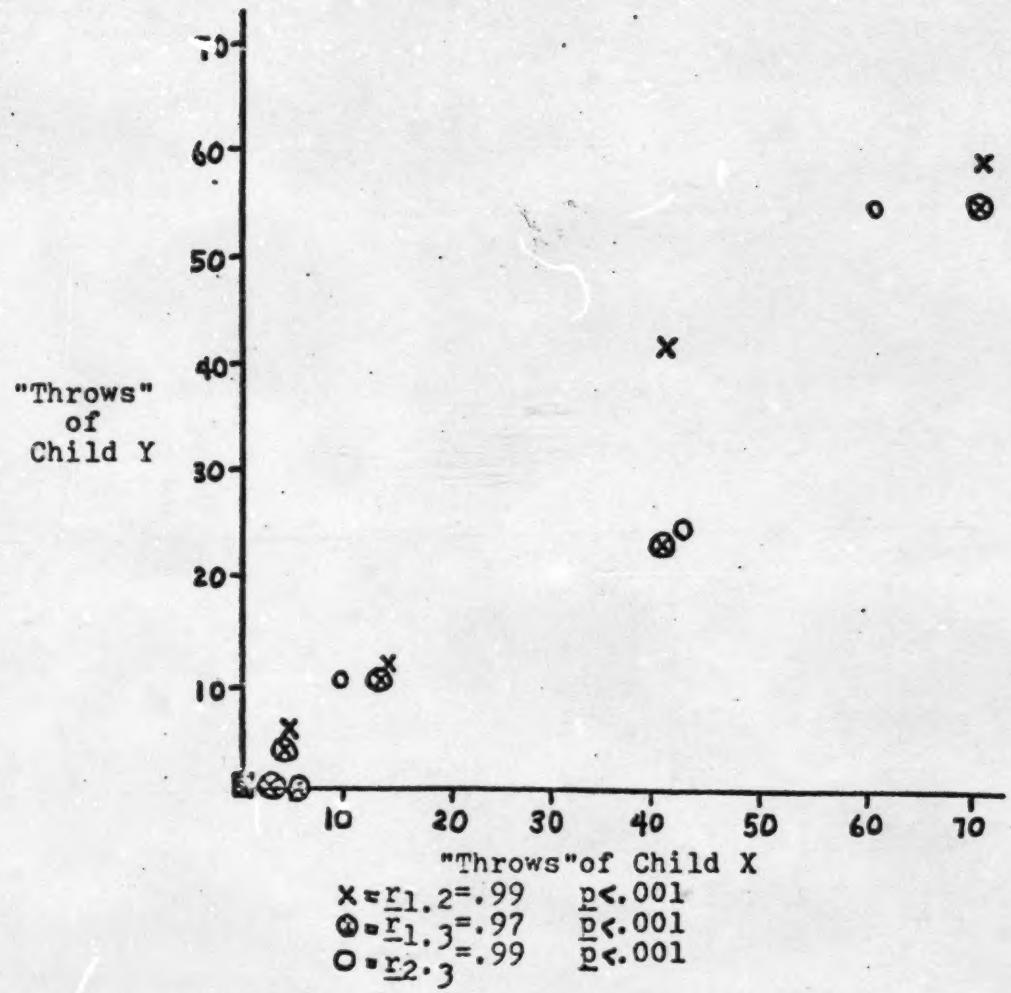

Figure 6. Scatter diagram and correlations of "throws clay" for the three partners in male groups.

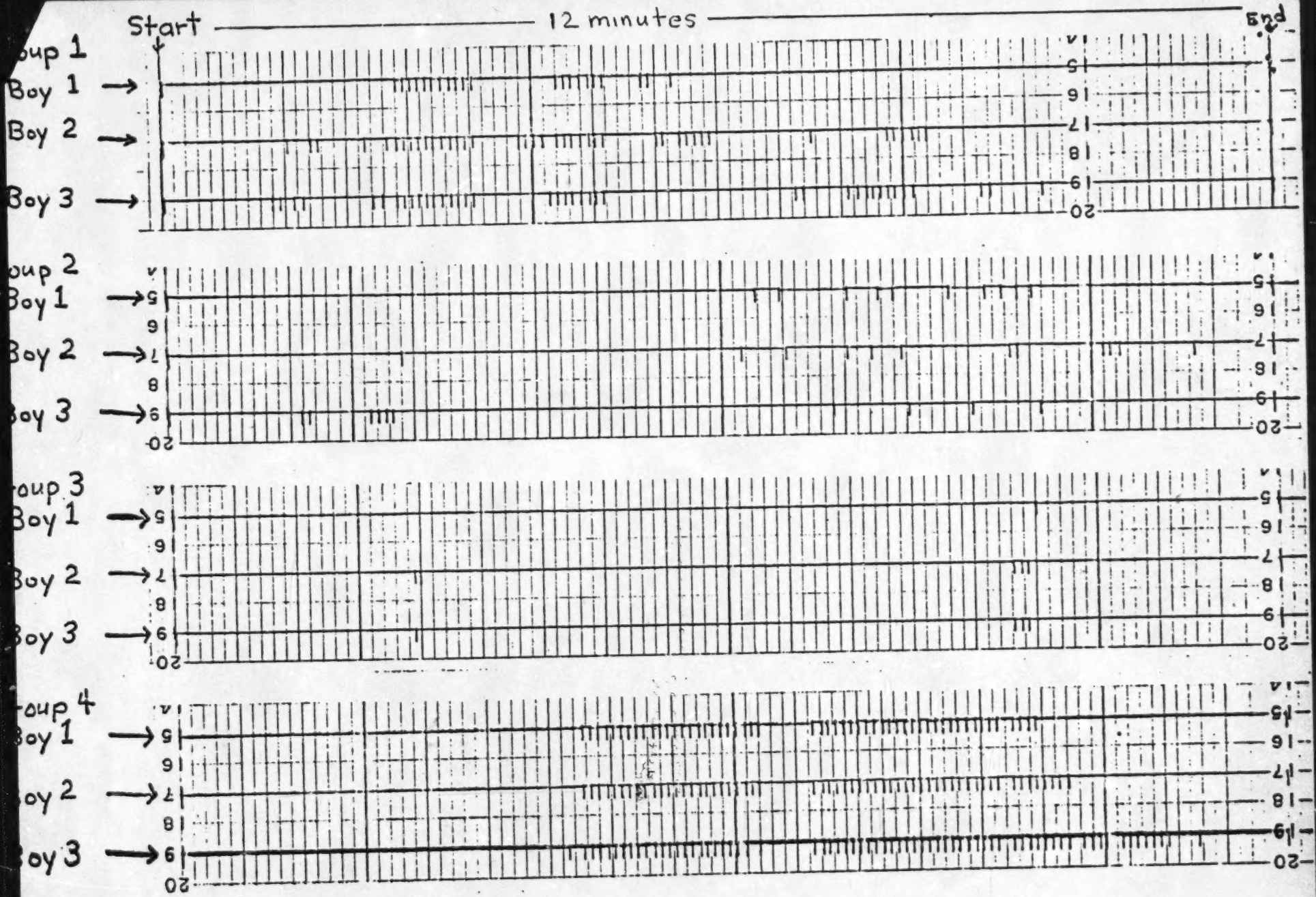

Figure 7. Visual representation of "throws clay" for the three partners in four male groups. Each mark represents a five-second block in which the behavior occurred.